

# PATENT SPECIFICATION

902,775

DRAWINGS ATTACHED.



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## COMPLETE SPECIFICATION.

### Improvements in or relating to Electrical Plugs.

I, KATHLEEN ZILLA RUMBLE, a citizen of the Union of South Africa, of 37 Oxford Road, Forest Town, Johannesburg, Transvaal, Union of South Africa, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to electrical plugs and in particular to the construction of the pins of such plugs.

Different standards exist for the diameters of the pins of electrical plugs. Thus, in South Africa and Britain, there are three standards, for 2-, 5- and 15-amp plugs respectively.

An object of this invention is to provide, for an electrical plug, a pin construction which is capable of rapid and ready adjustment to any one of a range of diameters to suit the diameters of the sockets in the standard range of outlets.

According to the invention there is provided an electrical plug having pins adjustable to different diameters, wherein each pin structure includes a socket in which a hollow pin of the largest required diameter is axially slidable and a second pin of a smaller diameter similarly slidable within the first pin.

In co-pending Application No. 17725/60, (Serial No. 902,774) of the present Applicant, there is disclosed an electrical plug with which the arrangement of the present invention may advantageously be used.

In order that the invention may be more clearly understood and readily carried into effect, three embodiments thereof will now be described with reference to the accompanying drawings, in which:—

Figure 1 is a longitudinal section through a pin of the invention;

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Figure 2 is a perspective view of one element of the pin in Figure 1;

Figure 3 is a longitudinal section through a second form of the pin of the invention; and

Figure 4 is a longitudinal section through a third form of pin of the invention.

In Figures 1 and 2 three units 2, 4, 6 of a pin correspond to the three possible socket diameters of the standard outlets. The outer unit 2 is a metal sleeve that is slidably accommodated within a metal socket 8 in the body of an electric plug. The intermediate unit 4 is likewise a metal sleeve that is slidable within the outer sleeve 2, while the inner unit 6 is a solid rod that slides within the intermediate sleeve 4.

The socket 8 has a longitudinal slot in which is engaged a peg 12 provided on the sleeve 2. At both ends of the socket 8 the slot terminates in bayonet slots 14 and 16 into which the peg 2 is caused to enter by rotational movement of the sleeve within the socket, to lock the sleeve in a projected or on a retracted position.

The sleeve 2 has a slot 18 with bayonet slots 20, 22, in which a peg 24 on the inside of the sleeve 4 engages. The sleeve 4 also has a slot 26 in which a peg 28 on the proximal end of the rod 6 engages. The slot 26 has only one bayonet slot, at its proximal end, because locking of the rod in retracted position is not feasible owing to the face that, when retracted, it presents nothing which can be grasped to effect locking or unlocking.

In use all the telescoping units are projected, the unit of required diameter is selected, it is locked by rotating it for its peg to enter its associated bayonet slot, the other units are retracted and the sleeve 2 or 4 whichever be unselected, or both, if

the unit 6 be selected, is or are locked in retracted position by rotating the assembly.

In another form of pin 30 illustrated in Figure 3 which is for simplicity shown to have only one diameter, the plug body 31 houses a socket 32 which is kept in position by a cover 35. The front end of the socket 32 is formed internally with screw threads 34 which are engaged by screw-threading 36 on the rear end of the pin 32. A head 38 on the pin prevents separation from the socket. Rotation of the pin either locks the pin in projected position or frees it to permit retraction into the socket 32, from which it can be extracted gravitationally for re-projection.

A two-diameter pin is similarly constructed, save that the smaller diameter pin is slidable within the larger pin and can be locked in extended position by screw-threading, in all respects the same as the screw threading 34, 36 already described.

In the pin of Figure 4 a socket 38 is secured within the body of the plug. The forward end of the socket is internally screw-threaded at 40. Within the socket 38 is accommodated a sleeve 42 which is the unit of the pin of greater diameter. Its rear end is screw-threaded externally at 44 to mate with the threading 40 on the socket. The unit 42 may thus be projected and rotated to engage the threads 40, 44, or retracted by unscrewing it and pushing it into the socket.

A peg 46 is rigidly held within the cavity of the socket 38 and coaxial with it by a screw-threaded shank 48 which passes through a wall 50 in the body and is secured by a nut 52. The forward end of the peg is screw-threaded at 54.

Between the peg and the unit 42 there is a sleeve 56, which is the unit of lesser diameter. This unit slides within the unit 42. It is internally screw-threaded at 58 at its rear end to mate the threads 54 of the peg 46.

In use, with the unit 42 retracted, the unit 56 is shaken out of the unit 42 and rotated for the threads 54 and 58 to engage.

In this embodiment, each unit can be extended beyond the body only to the limit of its own length, which minimizes the possibility that chance contact of two projected units will cause a shock; a possibility which is always to the fore in the embodiment of Figure 1 in which all units can be extended simultaneously.

#### WHAT I CLAIM IS:—

1. An electrical plug having pins adjustable to different diameters, wherein each pin structure includes a socket in which a hollow pin of the largest required diameter is axially slidable and a second pin of a smaller diameter similarly slidable within the first pin.

2. A plug as claimed in Claim 1 wherein the second pin is hollow, and a third pin is axially slidable within the cavity of the second pin.

3. A plug as claimed in either of Claims 1 or 2 including means to prevent complete withdrawal of the outermost pin from the socket and of the other pin or pins from the outermost pin.

4. A plug as claimed in any one of Claims 1 to 3 including locking means to hold any one pin stably projected from the body of the plug.

5. A plug as claimed in Claim 4 wherein the locking means consists in a peg and slot arrangement associated with each pin structure, caused to interengage by rotation of the structure.

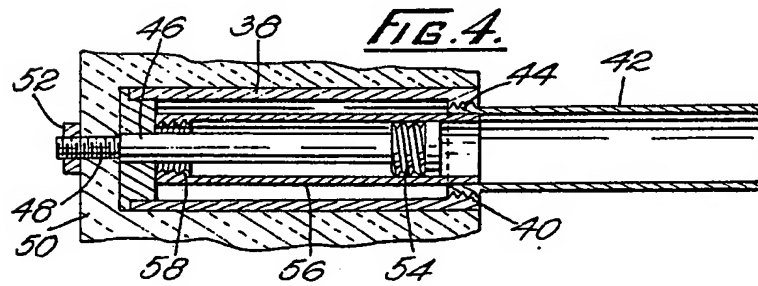
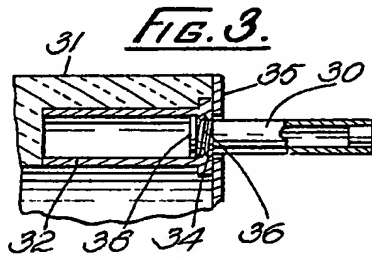
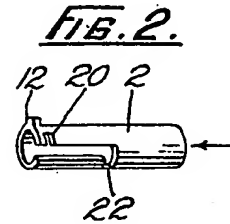
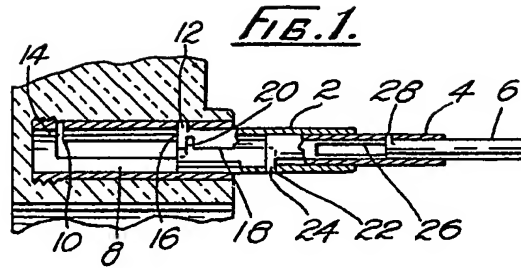
6. A plug as claimed in Claim 4 or Claim 5 including means to lock all but the smaller or smallest diameter pin in a retracted position.

7. A plug as claimed in Claim 4 wherein the locking means consists in complementary screw-threading on the sliding parts.

8. A plug as claimed in Claim 7 including, a socket, an outer sleeve slidably accommodated within the socket, complementary screw-threading on the sleeve and socket to hold the sleeve projected from the socket, a fixed central peg coaxial with the socket, an inner sleeve between the peg and the outer sleeve slidable within the latter, and complemented screw-threading on the peg and the inner sleeve to hold the inner sleeve projected from the outer sleeve when the latter is retracted within the socket.

9. An electrical plug having pins adjustable to different diameters substantially as described with reference to Figures 1 and 2, 3, 4 of the accompanying drawings.

HASELTINE, LAKE & CO.,  
Chartered Patent Agents,  
28 Southampton Buildings,  
Chancery Lane, London, W.C.  
Agents of the Applicant.



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